Schlumberger

SIMULTANEOUS
COMPENSATED NEUTRON-FORMATION DENSITY

COUNTY
FIELD
LOCATION
WELL
COMPANY

COMPANY INDIANA GEOLOGICAL SURVEY

WELL CLARK STATE FOREST SDH-290, EGSP #2

FIELD WILDCAT

COUNTY CLARK STATE INDIANA

LOCATION				Other Services:
CMG #283 NW LINE 1330 SW LINE				BHC DIL MLL FIL
API SERIAL NO.	SEC.	TWP.	RANGE	
-	-	2N	7E	

Permanent Datum: GL ; Elev.: 622
Log Measured From GL , 0 Ft. Above Perm. Datum
Drilling Measured From GL

Elev.: K.B. -
D.F. -
G.L. 622

Date	8-23-78			
Run No.	ONE			
Depth—Driller	275			
Depth—Logger	276			
Btm. Log Interval	275			
Top Log Interval	9			
Casing—Driller	8" @ 9'	@	@	@
Casing—Logger	9			
Bit Size	6 3/4			
Type Fluid in Hole	FRESH MUD			
Dens. | Visc.	- | -			
pH | Fluid Loss	- | - ml	ml	ml	ml
Source of Sample	PIT			
Rm @ Meas. Temp.	4.07 @ 80 °F	@ °F	@ °F	@ °F
Rmf @ Meas. Temp.	2.62 @ 80 °F	@ °F	@ °F	@ °F
Rmc @ Meas. Temp.	- @ - °F	@ °F	@ °F	@ °F
Source: Rmf | Rmc	M | -			
Rm @ BHT	4.07 @ 80 °F	@ °F	@ °F	@ °F
TIME Circulation Stopped	-			
TIME Logger on Bottom	1300			
Max. Rec. Temp.	80 °F	°F	°F	°F
Equip. | Location	7760 | LINTON			
Recorded By	FREMGEN			
Witnessed By Mr.	CARPENTER			

EASTERN GAS SHALES PROJECT
MORGANTOWN ENERGY RESEARCH
CENTER
P. O. BOX 880
MORGANTOWN, W.VA. 26505

FOLD HERE The well name, location and borehole reference data were furnished by the customer.

RUN NO.	ONE			
Service Order No.	16276			
Fluid Level	FULL			
Salinity, PPM CL.	-			
Speed - F.P.M.	30			
EQUIPMENT DATA				
Dens. Panel	468			
Dens. Cart.	346			
Dens. Skid.	448			
Dens. Sonde	504			
Dens. Source	2645			
Dens. Calibrator	295			
Neut. Panel	213			
Neut. Cart.	374			
Neut. Source	A270			
Neut. Calibrator	357			
GR Cart.	240			
Memorizer Panel	113			
Tape Recorder (TTR)	1763			
Depth Encoder (DRE)	X-1			
Pressure Wheel (CPW)	3705			
Centralizers: Enter Spring, Standoffs, In-line, or None — Type	DECENT			
Centralizers — No.	1			
Centralizers — S. O. — Inches	0			
CALIBRATION DATA				
GR BKG. CPS	220			
GR Source CPS	660			
GR Sens. - Cal	0-200			
GR T. C. - Cal	6			
CNL Short Spacing - Before Log	-			
CNL Long Spacing - Before Log	-			
CNL Short Spacing - After Log	-			
CNL Long Spacing - After Log	-			
FDC P¹ — Before Log	464			
FDC P² — Before Log	640			
FDC P¹ — After Log	464			
FDC P² — After Log	640			

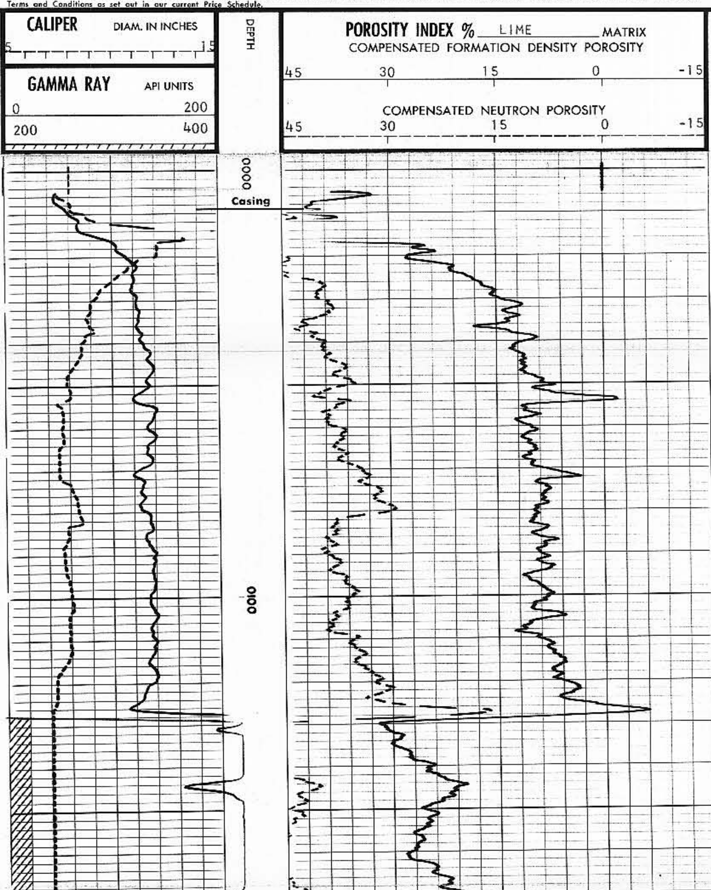
Type Log	Depth		

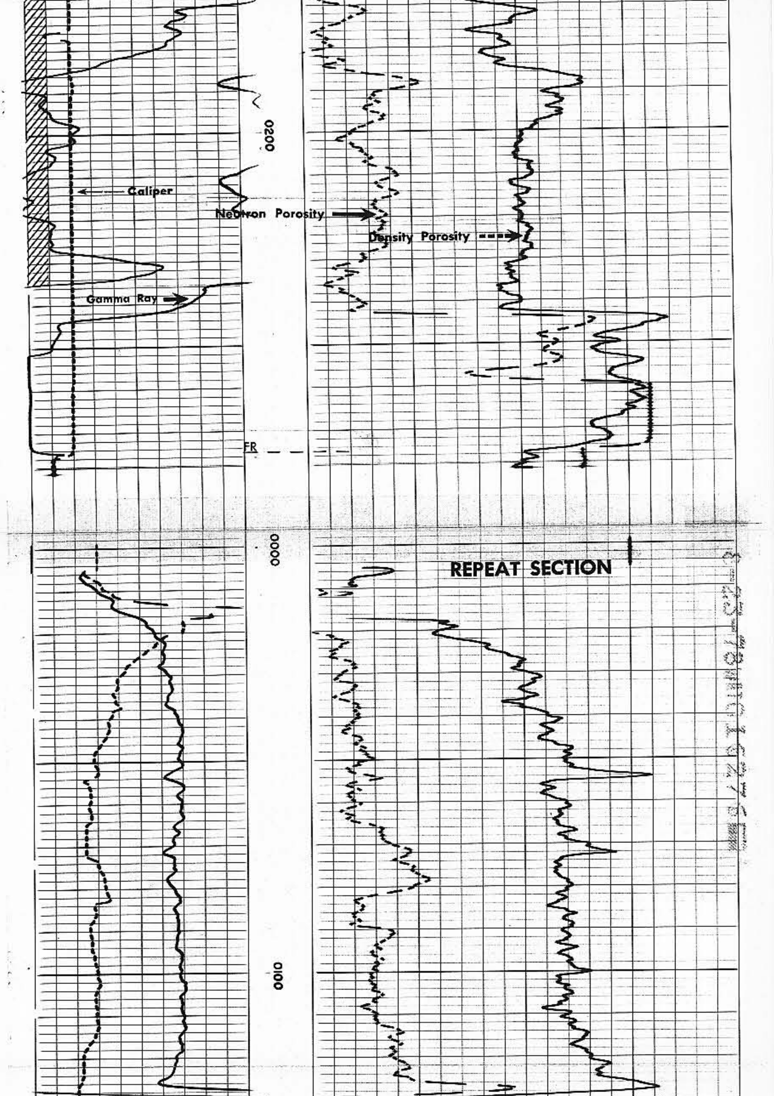
REMARKS:

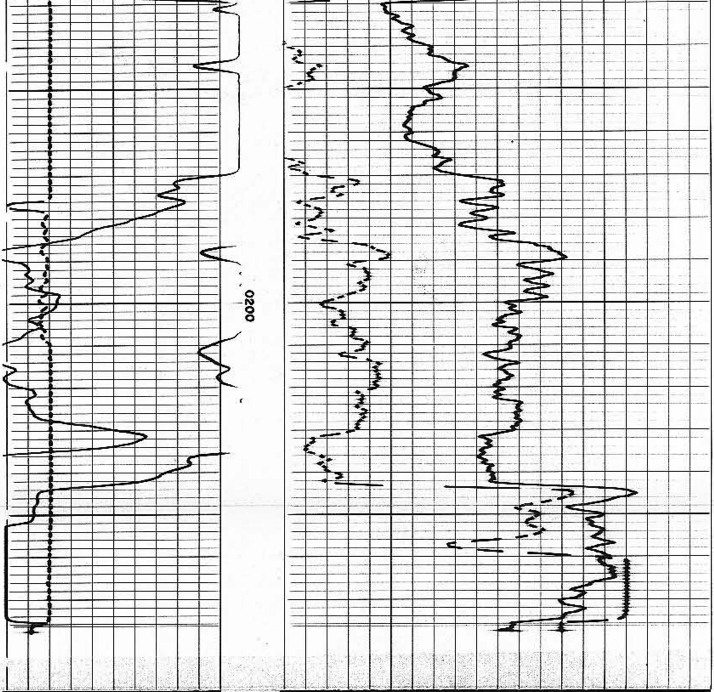
LOGGING DATA

DEPTH		CNP			FDC				GR			
Top	Bottom	Porosity Scale	Matrix	Auto Corr. or Hole Size Setting	Porosity Scale	Grain Density	Liquid Density	Hole Fluid	Sens. Logged	T. C.	Zero. Div. Left	Scale Per 100 Div.
9	275	30	LSOH	AUTO	30	2.71	1.0	LIQ	0-200	2	0L	200

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 4 of our General Terms and Conditions as set out in our current Price Schedule.







GAMMA RAY API UNITS

0 200

200 400

CALIPER DIAM. IN INCHES

5 15

POROSITY INDEX (%) LIME MATRIX

COMPENSATED FORMATION DENSITY POROSITY

45 30 15 0 -15

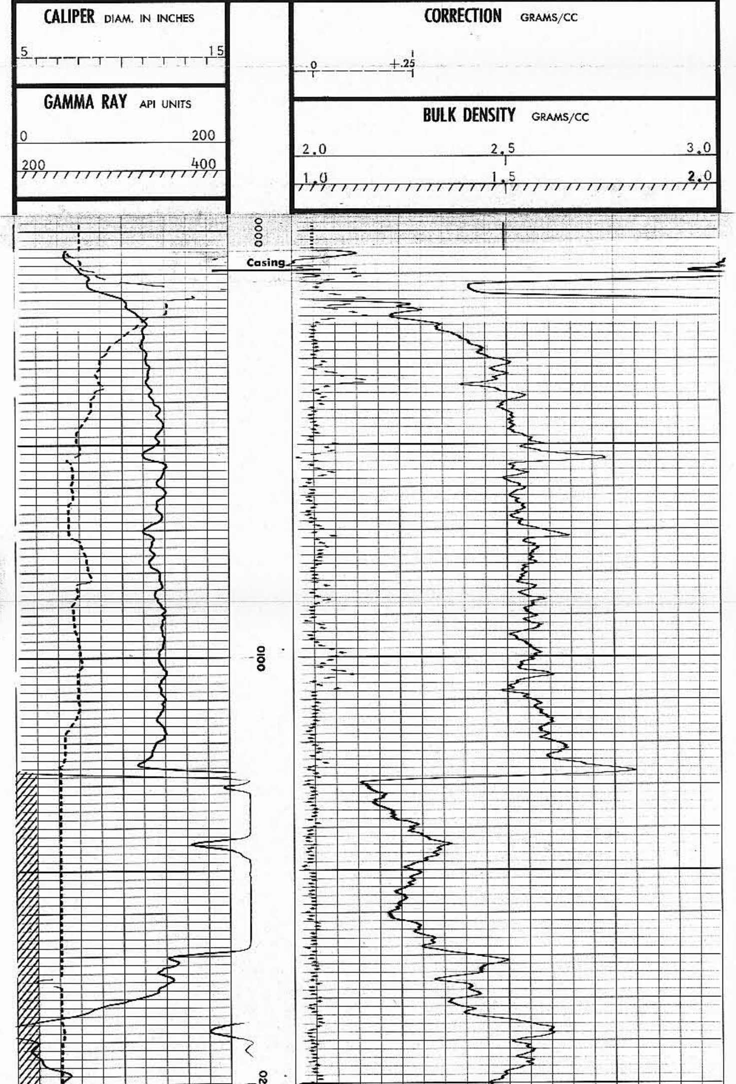
COMPENSATED NEUTRON POROSITY

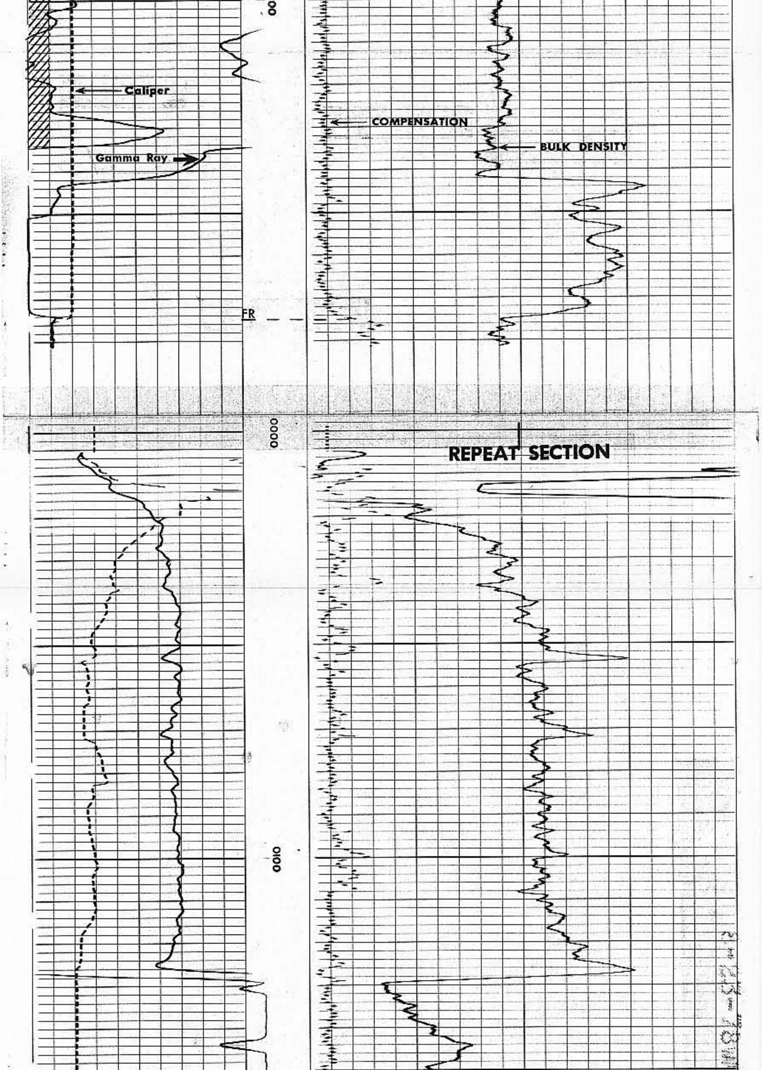
45 30 15 0 -15

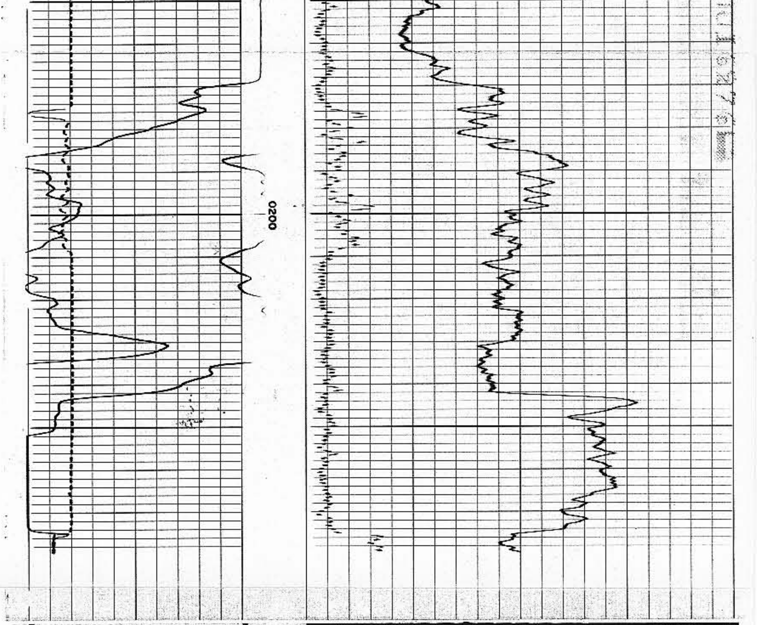
SIMULTANEOUS COMPENSATED NEUTRON-FORMATION DENSITY

⬍

COMPENSATED FORMATION DENSITY







GAMMA RAY API UNITS

0 200

200 400

CALIPER DIAM. IN INCHES

5 15

BULK DENSITY GRAMS/CC

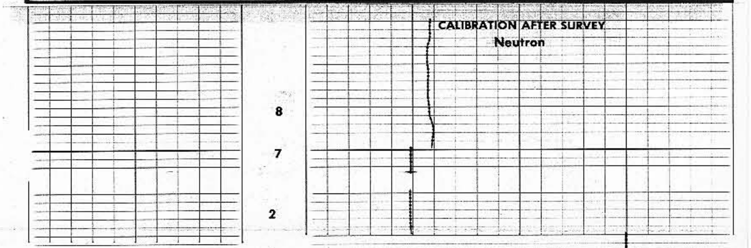
2.0 2.5 3.0

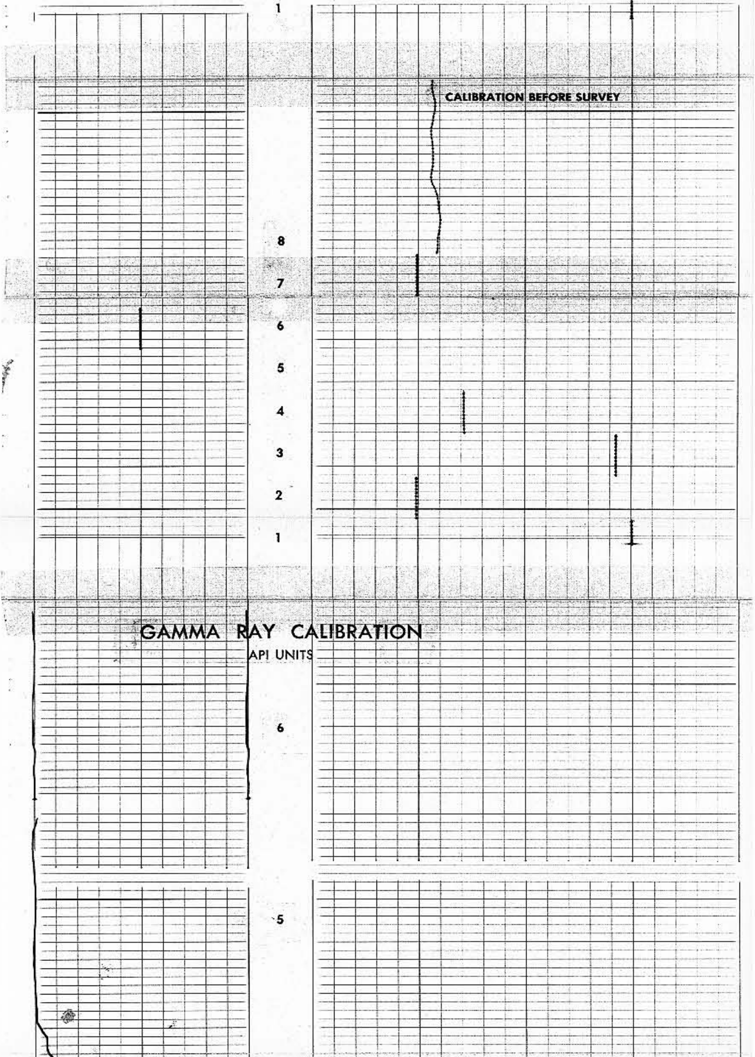
1.0 1.5 2.0

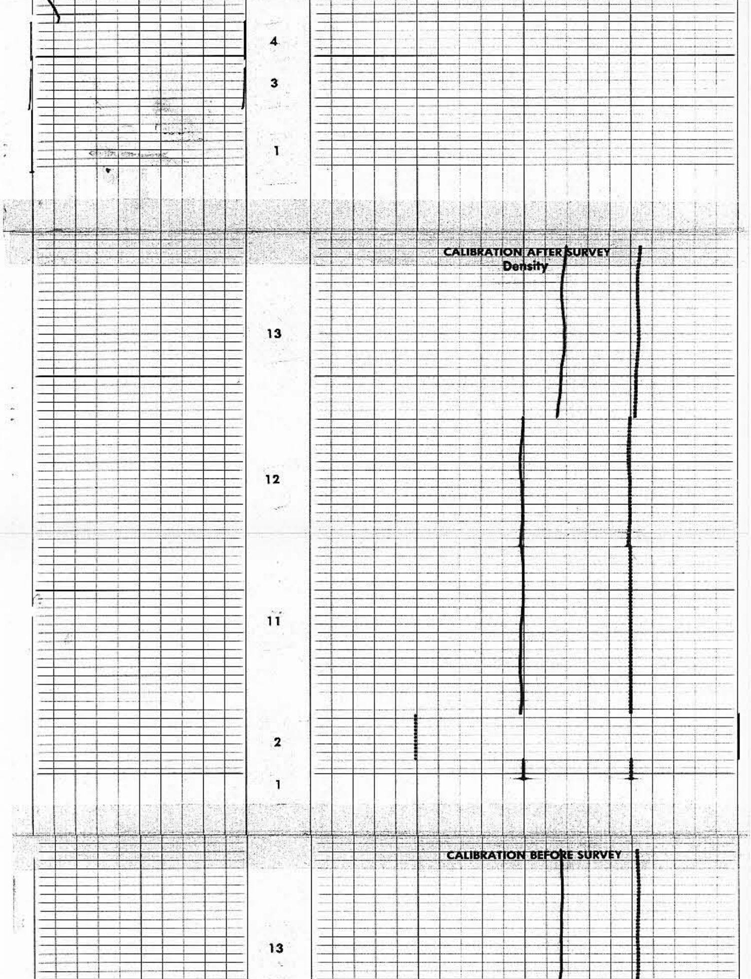
CORRECTION GRAMS/CC

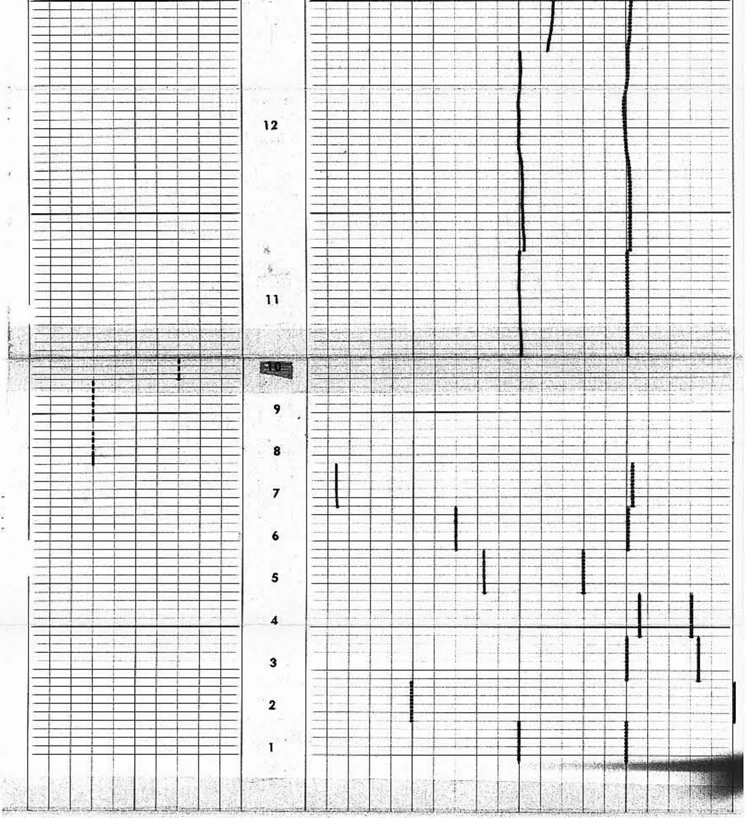
0 +.25

CALIBRATION RECORD









COMPENSATED NEUTRON CALIBRATION CODING

1. MECHANICAL ZERO
2. RECORDED SENSITIVITY (THRU MEMORIZER IF USED

PANEL TEST

	RATIO	OH POROSITY			CH POROSITY	
		LS ☒	SS ☐	DOL ☐	SS ☐	LS ☐
3.	1	1.6	4.9	−0.2	2.4	0.1
4.	2	15.6	19.7	8.1	13.0	9.0
5.	3	30.5	36.0	25.2	29.1	24.1
6.	4	45.4	53.1	47.5	47.4	43.2

7. POROSITY NORMALIZED WITH CNB-A IN PLACE
7A. TOOL IN NCT-B
8. LOG POSITION WITH CNB-A IN PLACE
8A. LOG POSITION WITH TOOL IN NCT-B

OH			CH	
LS	SS	DOL	SS	LS
18	22.2	10.4	15.3	11.2

RATIO (NORMALIZED) $= \dfrac{2.17}{\text{RATIO (NCT-B)}}$ RATIO LOG

FORMATION DENSITY COMPENSATED CALIBRATION CODING

1. MECHANICAL ZERO
2. RECORDER SENSITIVITY

PANEL TEST

		FDC LIQUID	
	POS	ρ	$\Delta\rho$
3.	# 1	2.92	.00
4.	# 2	2.78	+.14
6.	# 3	2.42	−.10
6.	# 4	2.35	.00
7.	# 5	2.08	.01

8. MECHANICAL ZERO CALIPER
9. 8″ RING
10. 12″ RING
11. TOOL CALIBRATE #1 SET $\rho = 2.50$
12. TOOL CALIBRATE #2 SET $\Delta\rho = .00$
13. LOG POSITION $\rho = 2.59$, $\Delta\rho = .015$

GAMMA RAY CALIBRATION CODING

1. MECHANICAL ZERO
2. ELECTRICAL ZERO
3. RECORDER SENSITIVITY
4. MEMORIZER ADJUSTMENT
5. BACKGROUND
6. CALIBRATE - SOURCE IN PLACE

CALIBRATION RECORD

COMPANY INDIANA GEOLOGICAL SURVEY

WELL CLARK STATE FOREST SDH-290, EGSP #2

FIELD WILDCAT

COUNTY CLARK STATE INDIANA

SCHL. FR 275
SCHL. TD 276
DRLR. TD 275

Elev: KB -
DF -
GL 622